

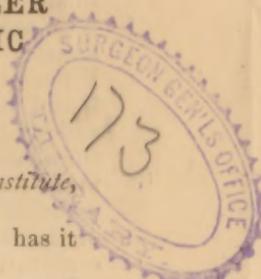
THE GERM-THEORY OF PASTEUR; AND NEW
DISCOVERIES OF DR. WESLEY MILLER
TO PREVENT DISEASES IN DOMESTIC
ANIMALS AND MANKIND GEN-
ERALLY BY VACCINATION.

Read before the FARMERS' CLUB of the *American Institute*,
November 15th 1881.

The more medical science has advanced, the more has it
aimed to prevent disease; especially infectious diseases.

A new branch of medical science, *Hygienie* has been created
comprising the study of the origin of disease, and the means
of preventing the same, that the health, wealth and happiness
of mankind, may be promoted. By scientific observations,
experiments and researches, certain facts have been establish-
ed, which give to us a better understanding of the origins of
the diseases of man, animals, and plants; of the nature of the
substances causing infectious diseases, of the contagions and
the miasms. Although far yet, from a perfect knowledge on
this subject, the practical value of what we have learned during
the last fifteen years, is very great, and more and more are we
desirous, as in many other things, to know that we might know,
every thing we do not know. We know, it has been enter-
tained, that infectious diseases, depend on a process of fer-
mentation, and consequently these diseases were called Zy-
motic diseases, from *zymosis* fermentation.

Pasteur, the celebrated French chemist, first showed that
the process of fermentation depends on the presence, and ac-
tivity of certain organisms and that the process of fermentation
is at once interrupted, by the destruction of these organisms.
It was then at once assumed, that infectious diseases were
caused by such living organisms, and this theory was supported
by observations, made on epidemic diseases of plants and in-
sects, where such living contagions were found to be the cause
of morbid changes. The *Grape disease* which caused so much
destruction in wine growing countries, is produced by a
certain *micrococcii* fungus, the germs of which are found in
the grapes destroying the same. The *Potatoe disease* likewise,
was found to be caused by certain fung s, living on the leaves,
its germs penetrating the ground, inserting themselves, and
taking root in the *tuber*, thereby destroying the latter; thus
in a similar way occur some epidemic diseases of *insects*, of
flies, *caterpillers* and *beadles*. In some of these diseases of
insects and plants, the nature of the infection, the spreading
of the contagion, the relation between the progressing disease
and the progressing development of the fungi, has been most
exactly observed, and has also been confirmed by experiments.
Some vegetatious of fungi, the parasitic nature of which is
doubtful, are found in external and internal cavities of the
body, especially in the ear, in enlarged bronchial tubes, in
ulcerating cavities of the lungs. They have no connection
whatever with the morbid process, as they develop in the
sloughing tissue. *They certainly do not cause disease.* The
most important of infectious diseases of which it has been
demonstrated that vegetable organisms are the cause, where
a living virus has been discovered, are *septicæmia*,
anthrax and *chicken cholera*.



It is now a question of controversy whether indeed the bacteria are the carriers of infection, though they are present in all virulent matter, experiments have shown that if the bacteria are isolated by the means of filtration of the infectious matter, *they then possess no infectious qualities*. We owe to French investigators above all to *Pasteur*, thanks, for having found means to secure immunity against infectious diseases, and we have to pay respect to the French Government, who furnished a certain sum of money to prosecute these experiments; and also to the Agricultural Societies who furnished a valuable stock, for which to experiment upon; and this is one of the instances in which France has marched at the head of civilization.

It was fully demonstrated before the *International Medical Congress*, of London, by Professor *Pasteur*, in support of his theory in preparing a virus, to inoculate animals to give them immunity against the destructive epidemics of *anthrax, chicken cholera and charban*. The Agricultural Society of *Melen*, France, placed at his disposal fifty sheep, of which twenty-five were vaccinated with *anthrax* vaccine, prepared by himself. A fortnight afterwards those vaccinated and those not vaccinated were inoculated with a *completely virulent* *anthrax* liquid; the twenty-five not vaccinated with the modified vaccine died of *anthrax*; the other twenty-five that were vaccinated resisted the disease. From these results, within the space of thirty days in the departments about Paris, more than twenty thousand sheep, and a large number of cattle and horses, were protected from contagious diseases.

And in his address concludes with expressing the great pleasure at the thought of making known the result of vaccination upon a disease, more terrible perhaps for domestic animals, than small pox is to man. Sir *James Paget*, in his remarks, said *Pasteur* had done for the lower animals what *Jenner* had already done for the human race; and while *Jenner*, seeking to benefit mankind, had to fight against a vehement opposition, the practice of animal vaccination, for the benefit of mere human property, met with no opposition.

From these general remarks we will not occupy further time but call your attention to a more important subject, of the discovery of other diseases in the human beside small-pox that may be protected by vaccination. From a series of observations for several years on animal and human diseases, it was brought to general notice that there existed a close relationship between certain diseases of animals and mankind, and these diseases are practically equivalent to, or if not, nearly identical.

In 1873 an article was published in a secular journal, under the signature of Dr. *Wesley Miller*, of preventing diseases generally by vaccination, and it was then argued the possibility of preventing tuberculosis or consumption of the lungs in man by vaccination of the modified form of bovine virus of tuberculosis. We therefore claim the priority of the idea, the practice and discovery of obtaining a protective vaccine from a *corresponding disease* for other and a wider range of diseases as well. It has been shown that the aphthous foot

and mouth disease in the cow, is many respects, if not nearly identical, with scarlet fever in man. As proven in this country and of late in Europe, where forty cases of scarlet fever were traced to a dairy, from which the infected families received their milk.

Further, it is practically proved that a virulent poison or contagious fluid of infectious diseases, either contagious or not contagious, when diffused or passed through an animal membrane, from one to the other, lose their poisonous or contagious property, whereby the portion which has passed through the membrane becomes deprived of its virulence, while that which does not pass through, is yet retained, and this purified vaccine may then be used as an antidote or preventive in the human as well in the animal, with harmlessness and without danger.

If the law of vaccine protection is well understood, it is proven the poison of a like character has the power of neutralizing and destroying the action of another, as practised in certain tropical countries. Of the inoculation of the person by the pricking of both arms with the tooth of a rattlesnake, which renders him safe from the bite of a venomous reptile; and this leads to a suggestive idea that here lies a prophylactic or preventive remedy for that dreaded disease hydrophobia, by cultivating the specific poison from the animal as a preventive in which the disease originated.

The usefulness of protective vaccination is now well understood and an acknowledged fact in two or more distinct diseases, small pox in man and pleuro-pneumonia in cattle, and it now remains to be seen whether the method has not a much wider application. No less interesting is the treatment of the cattle disease concerning the use of milk from animals affected with pleuro-pneumonia. These results are based upon such experts as Professor L. Reunolt, P. H. Reuby and J. P. Collins, of the veterinary college of Alfret, Paris, of a mistaken idea that ought to be understood. It has been stated, the milk of diseased cattle was poisonous, this in a measure is not correct: in the first place, if it be remembered, there are three stages in the cattle disease; the first stage of pleuro-pneumonia is easily cured, and there is no danger whatever from the meat or milk, in spite of opinions to the contrary by eminent veterinary surgeons. I am prepared to prove that vaccination at this stage will prevent a spread of the disease. The experiments made in France, Germany and Australia puts this question beyond the pale of controversy. In regard to the second stage, the time for its development has never been accurately ascertained, but it varies from six weeks to three months. If the disease be properly treated in the first stage it cannot become chronic. The meat and milk are then considered injurious, the milk decidedly so. The symptoms of the third or last stage are tubercles in the lungs, when generated in the human system, is called in common parlance phthisis pulmonalis; or consumption of the lungs, and recovery is impossible. At this stage the animal is decidedly poisonous for both meat and milk, and in contact, and should at once be destroyed.

In regard to the origin of the disease, this is the solution of the whole matter; the want of proper ventilation lies at the

root of the evil. The fermentation of vegetable decomposition in the stables generates sulphuric acid, and this when inhaled with vapor of ammonia, has a most injurious effect upon the cattle. And here we would observe that this disease never occurs in young cattle spontaneously; in their case the malady is derived entirely from contact with diseased animals. The course pursued by *Pasteur* to secure a protective vaccine in animal vaccinations, were based upon the so-called germ theory, that by taking infectious matter of animals affected with anthrax, or a specific disease, and submitting this matter to a certain treatment by passing it through a series of prolonged cultivations, from one to the other, having oxygen to act upon, and by its continuance, the germs or infectious matter lose their virulence, and reach a condition that when introduced into the animal system gives immunity against the disease from which it originated. The correctness of a protective vaccine obtained by mitigated oxygen is not yet fully established; neither is it to be relied upon from its varying degree of virulence in its production. Although it may give a protective power for a limited period, when the conditions of its culture are favorable, no satisfactory results can be obtained by its use. In submitting these experiments and facts, as heretofore practised in animal vaccinations, the evidence has been long established that a correctly cultivated vaccine matter, when passed through an *animal membrane*, as instituted by *Jenner*, is the only correct method of obtaining an attenuated virus; based upon a general law, applicable to all kinds of virus that gives protection from a disease as vaccination has given to small pox.

The idea of protecting the system from a disease, the human as well as the animal, with a harmless and correctly prepared vaccine, is justifiable in its application, and will soon be acknowledged by the whole civilized world. To *Pasteur*, then belongs the honor of having first stirred the public mind from his observations on the diseases of chicken cholera, charbon, anthrax, and the treatment of contagious diseases in animals, by cultivating a specific disease-germ at long intervals of time to lessen its virulence, as a preventive. But the fact seems to have been entirely overlooked, that when an animal is vaccinated with B.vine Virus, (as propagated in procuring Bovine Virus for human vaccinations) to prevent small pox in man, gives immunity to the animal from contagious diseases, as the supposed disease-germ mitigated in virulence by oxygen, has given to Anthrax, Chicken-Cholera and other diseases.

It may then be seen, we have a vaccine preventive, applicable to all contagious diseases of the animal, after the manner of *Jenner*, that is harmless, easily obtainable, and gives a protective power from contagious diseases.

The manner in which protective vaccination act, this subject, we do not wish to take up at present.

The parasite, or germ theory, is not yet a scientific system; a freak of the imagination; and most of its claims have not yet been proven or sustained. The alledged discoveries of a characteristic disease-germ, that may be lessened in virulence, in which oxygen has a limited or free access is not a genuine protective in vaccination, and will soon disappear in utter darkness.